Journal of MOLECULAR BIOLOGY

EDITOR-IN-CHIEF
J. C. KENDREW

ASSISTANT EDITOR
S. BRENNER

EDITORIAL BOARD
C. R. Cantor
P. Chambon
W. W. Franke
M. Gellert
G. A. Gilbert
M. Gottesman
I. Herskowitz
R. Huber
H. E. Huxley
A. Klug
V. Luzzati
J. H. Miller
M. F. Moody
K. Simons

VOLUME 168

25 July to 25 August 1983

ACADEMIC PRESS
London New York San Francisco

Copyright © 1983, by Academic Press Inc. (London) Ltd.

ALL RIGHTS RESERVED

No part of this volume may be reproduced in any form, by photostat, microfilm, or any other means, without written permission from the publishers.

Printed in Great Britain

CONTENTS OF VOLUME 168

NUMBER 1, 25 JULY 1983

OU, J.-H., STRAUSS, E. G. and STRAUSS, J. H., The 5′-Terminal Sequences of the Genomic RNAs of Several Alphaviruses 1

BENDER, W., SPIERER, P. and HOGNESS, D. S., Chromosomal Walking and Jumping to Isolate DNA from the *Ace* and *rosy* Loci and the Bithorax Complex in *Drosophila melanogaster* 17

SPIERER, P., SPIERER, A., BENDER, W. and HOGNESS, D. S., Molecular Mapping of Genetic and Chromomeric Units in *Drosophila melanogaster* 35

KLYSIK, J., STIRDIVANT, S. M., SINGLETON, C. K., ZACHARIAS, W. and WELLS, R. D., Effects of 5 Cytosine Methylation on the *B–Z* Transition in DNA Restriction Fragments and Recombinant Plasmids . . . 51

WARD, D. F., DELONG, A. and GOTTESMAN, M. E., *Escherichia coli nusB* Mutations that Suppress *nusA1* Exhibit λ N Specificity . . . 73

ARIAS, C., BELL, J. R., LENCHES, E. M., STRAUSS, E. G. and STRAUSS, J. H., Sequence Analysis of Two Mutants of Sindbis Virus Defective in the Intracellular Transport of Their Glycoproteins 87

GAFFNEY, D., SKURRAY, R. and WILLETTS, N., Regulation of the F Conjugation Genes Studies by Hybridization and *tra-lacZ* Fusion . . 103

YATES, L. D. and GREASER, M. L., Quantitative Determination of Myosin and Actin in Rabbit Skeletal Muscle 123

LOUIE, A. H. and SOMORJAI, R. L., Differential Geometry of Proteins. Helical Approximations 143

DIJKSTRA, B. W., RENETSEDER, R., KALK, K. H., HOL, W. G. J. and DRENTH, J., Structure of Porcine Pancreatic Phospholipase A_2 at 2·6 Å Resolution and Comparison with Bovine Phospholipase A_2 . . . 163

ASCENZI, P., BRUNORI, M., GIACOMETTI, G. M., WINTERHALTER, K. H. and SMIT, J. D. G., Spectral Properties and Reactivity towards Azide of *Dicrocoelium dendriticum* Met-Hemoglobin 181

LETTERS TO THE EDITOR

FLINTA, C., VON HEIJNE, G. and JOHANSSON, J., Helical Sidedness and the Distribution of Polar Residues in Trans-membrane Helices . 193

GAYKEMA, W. P. J., GROENDIJK, H., DOORTEN, G., VEREYKEN, J. M. and HOL, W. G. J., Crystals Containing a Single Subunit Type of *Panulirus interruptus* Haemocyanin 197

Guerlesquin, F., Bruschi, M., Astier, J.-P. and Frey, M., Preliminary Crystallographic Data on a Ferredoxin from *Desulfovibrio desulfuricans* (Norway Strain) 203

Number 2, 5 August 1983

Ueno, H., Rodgers, M. E. and Harrington, W. F., Self-association of a High Molecular Weight Subfragment-2 of Myosin Induced by Divalent Metal Ions 207

May, F. E. B., Westley, B. R., Wyler, T. and Weber, R., Structure and Evolution of the *Xenopus laevis* Albumin Genes 229

Toda, T., Umesono, K., Hirata, A. and Yanagida, M., Cold-sensitive Nuclear Division Arrest Mutants of the Fission Yeast *Schizosaccharomyces pombe* 251

Umesono, K., Toda, T., Hayashi, S. and Yanagida, M., Two Cell Division Cycle Genes *NDA2* and *NDA3* of the Fission Yeast *Schizosaccharomyces pombe* Control Microtubular Organization and Sensitivity to Anti-mitotic Benzimidazole Compounds. 271

Daldal, F., Molecular Cloning of the Gene for Phosphofructokinase-2 of *Escherichia coli* and the Nature of a Mutation, *pfkB1*, Causing a High Level of the Enzyme 285

Stragier, P., Richaud, F., Borne, F. and Patte, J.-C., Regulation of Diaminopimelate Decarboxylase Synthesis in *Escherichia coli*. I. Identification of a *lysR* Gene Encoding an Activator of the *lysA* Gene 307

Stragier, P., Danos, O. and Patte, J.-C., Regulation of Diaminopimelate Decarboxylase Synthesis in *Escherichia coli*. II. Nucleotide Sequence of the *lysA* Gene and its Regulatory Region 321

Stragier, P. and Patte, J.-C., Regulation of Diaminopimelate Decarboxylase Synthesis in *Escherichia coli*. III. Nucleotide Sequence and Regulation of the *lysR* Gene 333

Banner, C. D. B., Moran, C. P., Jr and Losick, R., Deletion Analysis of a Complex Promoter for a Developmentally Regulated Gene from *Bacillus subtilis* 351

Rees, D. C., Lewis, M. and Lipscomb, W. N., Refined Crystal Structure of Carboxypeptidase A at 1·54 Å Resolution 367

Chou, K.-C., Némethy, G. and Scheraga, H. A., Role of Interchain Interactions in the Stabilization of the Right-handed Twist of β-sheets 389

Hollecker, M. and Creighton, T. E., Evolutionary Conservation and Variation of Protein Folding Pathways. Two Protease Inhibitor Homologues from Black Mamba Venom 409

LETTERS TO THE EDITOR

BARTNIK, E. and DE ROBERTIS, E. M., Mitochondrial Transfer RNA Genes from Fungi (*Aspergillus nidulans*) and Plants (*Lupinus luteus*) are Transcribed in *Xenopus laevis* Oocyte Nuclei . . . 439

MCPHALEN, C. A., EVANS, C., HAYAKAWA, K., JONASSEN, I., SVENDSEN, I. and JAMES, M. N. G., Preliminary Crystallographic Data for the Serine Protease Inhibitor CI-2 from Barley Seeds 445

CHIRGADZE, Y. N., NIKONOV, S. N., BRAZHNIKOV, E. V., GARBER, M. B. and RESHETNIKOVA, L. S., Crystallographic Study of Elongation Factor G from *Thermus thermophilus* HB8 449

NUMBER 3, 15 AUGUST 1983

KAPLAN, J. B. and NICHOLS, B. P., Nucleotide Sequence of *Escherichia coli pabA* and its Evolutionary Relationship to *trp(G)D* 451

MURTHY, M. R. N., Comparison of the Nucleotide Sequences of Cucumber Mosiac Virus and Brome Mosaic Virus 469

SHINAGAWA, H., MAKINO, K. and NAKATA, A., Regulation of the *pho* Regulon in *Escherichia coli* K-12. Genetic and Physiological Regulation of the Positive Regulatory Gene *phoB* 477

MELLADO, R. P. and MURRAY, K., Synthesis of Yeast Histone 3 in an *Escherichia coli* Cell-free System 489

CHAN, C. S. M. and TYE, B.-K., A Family of *Saccharomyces cerevisiae* Repetitive Autonomously Replicating Sequences that have very Similar Genomic Environments 505

SZEBERÉNYI, J. and APIRION, D., Initiation, Processing and Termination of Ribosomal RNA from a Hybrid 5 S Ribosomal RNA Gene in a Plasmid 525

Appendix: ELFORD, R. M. and HOLMES, W. M., Fusion of the Tandem *Escherichia coli rrnA* Promoters to a Transcription Termination Signal from the End of *rrnD* 557

POON, P. H., SCHUMAKER, V. N., PHILLIPS, M. L. and STRANG, C. J., Conformation and Restricted Segmental Flexibility of C1, the First Component of Human Complement 563

TANI, T., WATANABE-NAGUSA, N., OKADA, N. and OHSHIMA, Y., Molecular Cloning and Characterization of a Gene for Rat U2 Small Nuclear RNA 579

LEVITT, M., Molecular Dynamics of Native Protein. I. Computer Simulation of Trajectories 595

Appendix: LEVITT, M. and MEIROVITCH, H., Integrating the Equations of Motion 617

LEVITT, M., Molecular Dynamics of Native Protein. II. Analysis and Nature of Motion 621

DELALIC, Z., TAKASHIMA, S., ADACHI, K. and ASAKURA, T., Dielectric Constant of Sickle Cell Hemoglobin. Dielectric Properties of Sickle Cell Hemoglobin in Solution and Gel 659

IKEDA-SAITO, M., YONETANI, T. and GIBSON, Q. H., Oxygen Equilibrium Studies on Hemoglobin from the Bluefin Tuna (*Thunnus thynnus*) . 673

LETTERS TO THE EDITOR

DELEPIERRE, M., DOBSON, C. M., SELVARAJAH, D., WEDIN, R. E. and POULSEN, F. M., Correlation of Hydrogen Exchange Behaviour and Thermal Stability of Lysozyme 687

WARSHEL, A. and CHURG, A. K., Converting Structural Changes Upon Oxidation of Cytochrome *c* to Electrostatic Reorganization Energy 693

NUMBER 4, 25 AUGUST 1983

SAUER, R. T., KROVATIN, W., DEANDA, J., YOUDERIAN, P. and SUSSKIND, M. M., Primary Structure of the *imm*I Immunity Region of Bacteriophage P22 699

DI NOCERA, P. P., DIGAN, M. E. and DAWID, I. B., A Family of Oligoadenylate-terminated Transposable Sequences in *Drosophila melanogaster* 715

SILVER, R. S., DAIGNEAULT, J. P., TEAGUE, P. D. and KANTROWITZ, E. R., Analysis of Two Purified Mutants of *Escherichia coli* Aspartate Transcarbamylase with Single Amino Acid Substitutions 729

KOONTZ, S. W., JAKUBOWSKI, H. and GOLDMAN, E., Control of RNA and Protein Synthesis by the Concentration of Trp-tRNA^{Trp} in *Escherichia coli* Infected with Bacteriophage MS2 747

GARFINKEL, M. D., PRUITT, R. E. and MEYEROWITZ, E. M., DNA Sequences, Gene Regulation and Modular Protein Evolution in the *Drosophila* 68C Glue Gene Cluster 765

TENEN, D. G., TAYLOR, T. S., HAINES, L. L., BRADLEY, M. K., MARTIN, R. G. and LIVINGSTON, D. M., Binding of Simian Virus 40 Large T Antigen from Virus-infected Monkey Cells to Wild-type and Mutant Viral Replication Origins 791

KLEIN, B. K., KING, T. C. and SCHLESSINGER, D., Structure of Partially Denatured *Escherichia coli* 23 S Ribosomal RNA Determined by Electron Microscopy 809

Woodhead, J. L. and Lowey, S., An *in Vitro* Study of the Interactions of Skeletal Muscle M-protein and Creatine Kinase with Myosin and its Subfragments 831

Perkins, S. J. and Weiss, H., Low-resolution Structural Studies of Mitochondrial Ubiquinol : Cytochrome *c* Reductase in Detergent Solutions by Neutron Scattering 847

Barlow, D. J. and Thornton, J. M., Ion-pairs in Proteins 867

La Mar, G. N., Davis, N. L., Parish, D. W. and Smith, K. M., Heme Orientational Disorder in Reconstituted and Native Sperm Whale Myoglobin. Proton Nuclear Magnetic Resonance Characterizations by Heme Methyl Deuterium Labeling in the Met-cyano Protein. . . 887

Letters to the Editor

Mahendrasingam, A., Pigram, W. J., Fuller, W., Brahms, J. and Vergne, J., Conformational Transitions in the Synthetic Polynucleotide Poly[d(G-C] · poly[d(G-C)] Double-helix . . . 897

Anderson, W. F., Cygler, M., Vandonselaar, M., Ohlendorf, D. H., Matthews, B. W., Kim, J. and Takeda, Y., Crystallographic Data for Complexes of the Cro Repressor with DNA . . 903

Comarmond, M.-B. and Tougard, P., Preliminary Crystallographic Study of the Fc Fragment of a Monoclonal IgG2b Murine Immunoglobin. 907

Index to Volume 168

Ace locus in *Drosophila melanogaster*, chromosomal walking and jumping to isolate DNA, 17
Actin and myosin, quantitative determination in rabbit skeletal muscle, 123
Adachi, K. (see also Delalic, Z.), 659
Albumin genes of *Xenopus laevis*, structure and evolution, 229
Alphaviruses, the 5′-terminal sequences of the genomic RNAs, 1
Amino acid substitutions, single, in two mutants of *Escherichia coli* aspartate transcarbamylase, 729
Anderson, W. F., Cygler, M., Vandonselaar, M., Ohlendorf, D. H., Matthews, B. W., Kim, J. & Takeda, Y., Crystallographic data for complexes of the Cro repressor with DNA, 903
Antigen, large T, SV40, from virus-infected monkey cells, binding to wild-type and mutant viral replication origins, 791
Apirion, D. (see also Szeberényi, J.), 525
Arias, C., Bell, J. R., Lenches, E. M., Strauss, E. G. & Strauss, J. H., Sequence analysis of two mutants of Sindbis virus defective in the intracellular transport of their glycoproteins, 87
Asakura, T. (see also Delalic, Z.), 659
Ascenzi, P., Brunori, M., Giacometti, G. M., Winterhalter, K. H. & Smit, J. D. G., Spectral properties and reactivity towards azide of *Dicrocoelium dendriticum* met-hemoglobin, 181
Aspartate transcarbamylase of *Escherichia coli*, analysis of two purified mutants with single amino acid substitutions, 729
Aspergillus nidulans mitochondrial tRNA genes are transcribed in *Xenopus laevis* oocyte nuclei, 439
Astier, J.-P. (see also Guerlesquin, F.), 203
Azide binding to *Dicrocoelium dendriticum* met-hemoglobin, 181

Bacillus subtilis, deletion analysis of a complex promoter for a developmentally regulated gene, 351
Bacteriophage MS2-infected *Escherichia coli*, control of RNA and protein synthesis by the concentration of Trp-tRNA^{Trp}, 747
— P22, primary structure of the *Imm*I immunity region, 699
Banner, C. D. B., Moran, C. P., Jr & Losick, R., Deletion analysis of a complex promoter for a developmentally regulated gene from *Bacillus subtilis*, 351
Barley seeds, preliminary crystallographic data for the serine protease inhibitor CI-2, 445
Barlow, D. J. & Thornton, J. M., Ion-pairs in proteins, 867
Bartnik, E. & De Roberts, E. M., Mitochondrial transfer RNA genes from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*) are transcribed in *Xenopus laevis* oocyte nuclei, 439
Bell, J. R. (see also Arias, C.), 87
Bender, W., Spierer, P. & Hogness, D. S., Chromosomal walking and jumping to isolate DNA from the *Ace* and *rosy* loci and the bithorax complex in *Drosphila melanogaster*, 17
Bender, W. (see also Spierer, P.), 35
Benzimidazole compounds, anti-mitotic, sensitivity is controlled by two cell division cycle genes *NDA2* and *NDA3* of the fission yeast *Schizosaccharomyces pombe*, 271
β-sheets, role of interchain interactions in the stabilization of the right-handed twist, 389
Binding of SV40 large T antigen from virus-infected monkey cells to wild-type and mutant viral replication origins, 791
Bithorax complex in *Drosophila melanogaster*, chromosomal walking and jumping to isolate DNA, 17
Black mamba venom, two protease inhibitor homologues; evolutionary conservation and variation of protein folding pathways, 409
Bluefin tuna (*Thunnus thynnus*), oxygen equilibrium studies on hemoglobin, 673
Borne, F. (see also Stragier, P.), 307
Bovine phospholipase A_2, structure comparison with porcine pancreatic phospholipase A_2, 163
Bradley, M. K. (see also Tenen, D. G.), 791
Brahms, J. (see also Mahendrasingam, A.), 897
Brazhnikov, E. V. (see also Chirgadze, Y. N.), 449
Brome mosaic virus and cucumber mosaic virus, comparison of their nucleotide sequences, 469
Brunori, M. (see also Ascenzi, P.), 181
Bruschi, M. (see also Guerlesquin, F.), 203
B–Z transition in DNA restriction fragments and recombinant plasmids, effects of 5 cytosine methylation, 51

C1, the first component of human complement, conformation and restricted segmental flexibility, 563
CI-2 serine protease inhibitor from barley seeds, preliminary crystallographic data, 445
Carboxypeptidase A, refined crystal structure at 1·54 Å resolution, 367
Cell division cycle genes *NDA2* and *NDA3* of the fission yeast *Schizosaccharomyces pombe* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
Chan, C. S. M. & Tye, B.-K., A family of *Saccharomyces cerevisiae* repetitive autonomously replicating sequences that have very similar genomic environments, 505
Chirgadze, Y. N., Nikonov, S. N., Brazhnikov, E. V., Garber, M. B. & Reshetnikova, L. S., Crystallographic study of elongation factor G from *Thermus thermophilus* HB8, 449
Chou, K.-C., Némethy, G. & Scheraga, H. A., Role of interchain interactions in the stabilization of the right-handed twist of β-sheets, 389
Chromomeric units in *Drosophila melanogaster*, molecular mapping, 35
Chromosomal walking and jumping to isolate DNA from the *Ace* and *rosy* loci and the bithorax complex in *Drosophila melanogaster*, 17
Churg, A. K. (see also Warshel, A.), 693
Cloning and characterization of a gene for rat U2 small nuclear RNA, 579
— of the gene for phosphofructokinase-2 of *Escherichia coli* and the nature of a mutation, *pfkB1*, causing a high level of the enzyme, 285
Cold-sensitive nuclear division arrest mutants of the fission yeast *Schizosaccharomyces pombe*, 251
Comarmond, M.-B. & Tougard, P., Preliminary crystallographic study of the Fc fragment of a monoclonal IgG2b murine immunoglobin, 907
Conformation and restricted segmental flexibility of C1, the first component of human complement, 563
Conformational transitions in the synthetic polynucleotide poly[d(G-C)]·poly[d(G-C)] double-helix, 897
Creatine kinase and M-protein of skeletal muscle, *in vitro* interactions with myosin and its subfragments, 831
Creighton, T. E. (see also Hollecker, M.), 409
Cro repressor complexes with DNA, crystallographic data, 903
Crystal structure, refined, of carboxypeptidase A at 1·54 Å resolution, 367
Crystallographic data for complexes of the Cro repressor with DNA, 903
— —, preliminary, for the serine protease inhibitor CI-2 from barley seeds, 445
— —, —, on a ferredoxin from *Desulfovibrio desulfuricans* (Norway strain), 203
Crystallographic study of elongation factor G from *Thermus thermophilus* HB8, 449
— —, preliminary, of the Fc fragment of a monoclonal IgG2b murine immunoglobulin, 907
Crystals containing a single subunit type of *Panulirus interruptus* haemocyanin, 197
Cucumber mosaic virus and brome mosaic virus, comparison of their nucleotide sequences, 469
Cygler, M. (see also Anderson, W. F.), 903
Cytochrome *c*, converting structural changes upon oxidation to electrostatic reorganization energy, 693

Daigneault, J. P. (see also Silver, R. S.), 729
Daldal, F., Molecular cloning of the gene for phosphofructokinase-2 of *Escherichia coli* and the nature of a mutation, *pfkB1*, causing a high level of the enzyme, 285
Danos, O. (see also Stragier, P.), 321
Davis, N. L. (see also La Mar, G. N.), 887
Dawid, I. B. (see also Di Nocera, P. P.), 715
De Roberts, E. M. (see also Bartnik, E.), 439
Deanda, J. (see also Sauer, R. T.), 699
Delalic, Z., Takashima, S., Adachi, K. & Asakura, T., Dielectric constant of sickle cell hemoglobin. Dielectric properties of sickle cell hemoglobin in solution and gel, 659
Delepierre, M., Dobson, C. M., Selvarajah, D., Wedin, R. E. & Poulsen, F. M., Correlation of hydrogen exchange behaviour and thermal stability of lysozyme, 687
Deletion analysis of a complex promoter for a developmentally regulated gene from *Bacillus subtilis*, 351
Delong, A. (see also Ward, D. F.), 73
DNA binding of SV40 T antigen, 791
—: chromosomal walking and jumping to isolate DNA from the *Ace* and *rosy* loci and the bithorax complex in *Drosophila melanogaster*, 17
— complexes with Cro repressor, crystallographic data, 903

DNA restriction fragments and recombinant plasmids, effects of 5 cytosine methylation on the *B–Z* translation, 51
— sequences, gene regulation and modular protein evolution in the *Drosophila* 68C glue gene cluster, 765
Desulfovibrio desulfuricans (Norway strain) ferredoxin, preliminary crystallographic data, 203
Developmentally regulated gene from *Bacillus subtilis*, deletion analysis of a complex promoter, 351
Di Nocera, P. P., Digan, M. E. & Dawid, I. B., A family of oligoadenylate-terminated transposable sequences in *Drosophila melanogaster*, 715
Diaminopimelate carboxylase synthesis regulation in *Escherichia coli*. Nucleotide sequence and regulation of the *lysR* gene, 333
— decarboxylase synthesis regulation in *Escherichia coli*. Identification of a *lysR* gene encoding an activator of the *lysA* gene, 307
— decarboxylase synthesis regulation in *Escherichia coli*. Nucleotide sequence of the *lysA* gene and its regulatory region, 321
Dicrocoelium dendriticum met-hemoglobin, spectral properties and reactivity towards azide, 181
Dielectric properties of sickle cell haemoglobin in solution and gel, 659
Digan, M. E. (see also Di Nocera, P. P.), 715
Dijkstra, B. W., Renetseder, R., Kalk, K. H., Hol, W. G. J. & Drenth, J., Structure of porcine pancreatic phospholipase A_2 at 2·6 Å resolution and comparison with bovine phospholipase A_2, 163
Dobson, C. M. (see also Delepierre, M.), 687
Doorten, G. (see also Gaykema, W. P. J.), 197
Drenth, J. (see also Dijkstra, B. W.), 163
Drosophila melanogaster, a family of oligo-adenylate-terminated transposable sequences, 715
— —, chromosomal walking and jumping to isolate DNA from the *Ace* and *rosy* loci and the bithorax complex, 17
— —, molecular mapping of genetic and chromomeric units, 35
Drosophila 68C glue gene cluster; DNA sequences, gene regulation and modular protein evolution, 765
Dynamics, molecular, of native protein. Analysis and nature of motion, 621
—, —, — — —. Computer simulation of trajectories, 595

Electron microscopic determination of structure of partially denatured *Escherichia coli* 23 S ribosomal RNA, 809
Electrostatic reorganization energy, converted from structural changes upon oxidation of cytochrome *c*, 693
Elford, R. M. & Holmes, W. M., Fusion of the tandem *Escherichia coli rrnA* promoters to a transcription termination signal from the end of *rrnD* (*Appendix* to Szeberényi, J. & Apirion, D., 525), 557
Elongation factor G from *Thermus thermophilus* HB8, crystallographic study, 449
Escherichia coli aspartate transcarbamylase, analysis of two purified mutants with single amino acid substitutions, 729
— — cell-free system, synthesis of yeast histone 3, 489
— — infected with bacteriophage MS2, control of RNA and protein synthesis by the concentration of Trp-$tRNA^{Trp}$, 747
— — K-12, regulation of the *pho* regulation; genetic and physiological regulation of the positive regulatory gene *phoB*, 477
— — *nusB* mutations that suppress *nusA1* exhibit λ N specificity, 73
— — *pabA* nucleotide sequence and its evolutionary relationship to *trp(G)D*, 451
— — phosphofructokinase-2, molecular cloning of the gene, and the nature of the mutation, *pfkB1*, causing a high level of the enzyme, 285
— —, regulation of diaminopimelate decarboxylase synthesis; identification of a *lysR* gene encoding an activator of the *lysA* gene, 307
— —, — — — — —; nucleotide sequence of the *lysA* gene and its regulatory region, 321
— —, — — — — —; — — and regulation of the *lysR* gene, 333
— — *rrnA* promoters, fusion to a transcription termination signal from the end of *rrdD*, 557
— — 23 S ribosomal RNA, partially denatured, structure determined by electron microscopy, 809
Evans, C. (see also McPhalen, C. A.), 445
Evolution, protein, modular, in the *Drosophila* 68C glue gene cluster, 765
— and structure of the *Xenopus laevis* albumin genes, 229
Evolutionary conservation and variation of protein folding pathways. Two protease inhibitor homologues from black mamba venom, 409
— relationship of nucleotide sequence of *Escherichia coli pabA* to *trp(G)D*, 451

F conjugation gene regulation studied by hybridization and *tra-lacZ* fusion, 103
Fc fragment of a monoclonal IgG2b murine immunoglobulin, preliminary crystallographic study, 907
Ferredoxin from *Desulfovibrio desulfuricans* (Norway strain), preliminary crystallographic data, 203
Fission yeast *Schizosaccharomyces pombe*, cold-sensitive nuclear division arrest mutants, 251
— — — —, two cell division cycle genes *NDA2* and *NDA3* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
5 cytosine methylation, effects on the *B–Z* transition in DNA restriction fragments and recombinant plasmids, 51
Five-terminal sequences of the genomic RNAs of several alphaviruses, 1
Flexibility and conformation of C1, the first component of human complement, 563
Flinta, C., Von Heijne, G. & Johansson, J., Helical sidedness and the distribution of polar residues in trans-membrane helices, 193
Folding pathways, protein, evolutionary conservation and variation; two protease inhibitor homologues from black mamba venom, 409
Frey, M. (see also Guerlesquin, F.), 203
Fuller, W. (see also Mahendrasingam, A.), 897

Gaffney, D., Skurray, R. & Willetts, N., Regulation of the F conjugation genes studied by hybridization and *tra-lacZ* fusion, 103
Garber, M. B. (see also Chirgadze, Y. N.), 449
Garfinkel, M. D., Pruitt, R. E. & Meyerowitz, E. M., DNA sequences, gene regulation and modular protein evolution in the *Drosophila* 68C glue gene cluster, 765
Gaykema, W. P. J., Groendijk, H., Doorten, G., Vereyken, J. M. & Hol, W. G. J., Crystals containing a single subunit type of *Panulirus interruptus* haemocyanin, 197
Gene, developmentally regulated, from *Bacillus subtilis*, deletion analysis of a complex promoter, 351
—, hybrid 5 S rRNA, in a plasmid; initiation, processing and termination of rRNA, 525
— *lysR* encoding an activator of the *lysA* gene, 307
— molecular cloning for phosphofructokinase-2 of *Escherichia coli* and the nature of a mutation, *pfkB1*, causing a high level of the enzyme, 285
— for rat U2 small nuclear RNA, molecular cloning and characterization, 579
– regulation in the *Drosophila* 68C glue gene cluster, 765
Genes, albumin, of *Xenopus laevis*, structure and evolution, 229
—, F conjugation, regulation studied by hybridization and *tra-lacZ* fusion, 103
— *NDA2* and *NAD3* of the fission yeast *Schizosaccharomyces pombe* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
—, tRNA, mitochondrial, from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*) are transcribed in *Xenopus laevis* oocyte nuclei, 439
Genetic and chromomeric units in *Drosophila melanogaster*, molecular mapping, 35
-- and physiological regulation of the positive regulatory gene *phoB*; regulation of the *pho* regulation in *Escherichia coli* K-12, 477
Genomic RNAs of several alphaviruses, the 5′-terminal sequences, 1
Giacometti, G. M. (see also Ascenzi, P.), 181
Gibson, Q. H. (see also Ikeda-Saito, M.), 673
Glue gene cluster of *Drosophila*; DNA sequences, gene regulation and modular protein evolution, 765
Glycoproteins of Sindbis virus, sequence analysis of two mutants defective in their intracellular transport, 87
Goldman, E. (see also Koontz, S. W.), 747
Gottesman, M. E. (see also Ward, D. F.), 73
Greaser, M. L. (see also Yates, L. D.), 123
Groendijk, H. (see also Gaykema, W. P. J.), 197
Guerlesquin, F., Bruschi, M., Astier, J.-P. & Frey, M., Preliminary crystallographic data on a ferredoxin from *Desulfovibrio desulfuricans* (Norway strain), 203

Haemocyanin of *Panulirus interruptus*, crystals containing a single subunit type, 197
Haines, L. L. (see also Tenen, D. G.), 791
Harrington, W. F. (see also Ueno, H.), 207
Hayakawa, K. (see also McPhalen, C. A.), 445
Hayashi, S. (see also Umesono, K.), 271
Helical approximations of proteins, 143
Helical sidedness and the distribution of polar residues in trans-membrane helices, 193
Heme orientational disorder in reconstituted and native sperm whale myoglobin. Proton n.m.r. characterizations by heme methyl deuterium labeling in the Met-cyano protein, 887

Hemoglobin from the bluefin tuna (*Thunnus thynnus*), oxygen equilibrium studies, 673
—, sickle cell, dielectric properties in solution and gel, 659
Hirata, A. (see also Toda, T.), 251
Histone 3, yeast, synthesis in an *Escherichia coli* cell-free system, 489
Hogness, D. S. (see also Bender, W.), 17
— (see also Spierer, P.), 35
Hol, W. G. J. (see also Dijkstra, B. W.), 163
— (see also Gaykema, W. P. J.), 197
Hollecker, M. & Creighton, T. E., Evolutionary conservation and variation of protein folding pathways. Two protease inhibitor homologues for black mamba venom, 409
Holmes, W. M. (see also Elford, R. M.), 557
Human complement first component, C1, conformation and restricted segmental flexibility, 563
Hybridization and *tra-lacZ* fusion used in study of regulation of the F conjugation genes, 103
Hydrogen exchange behaviour, correlation with thermal stability of lysozyme, 687

IgG2b monoclonal murine immunoglobulin, preliminary crystallographic study of the Fc fragment, 907
Ikeda-Saito, M., Yonetani, T. & Gibson, Q. H., Oxygen equilibrium studies on hemoglobin from the bluefin tuna (*Thunnus thynnus*), 673
*Imm*I immunity region of bacteriophage P22, primary structure, 699
Immunoglobulin, murine, IgG2b, monoclonal, preliminary crystallographic study of the Fc fragment, 907
Interchain interactions, role in the stabilization of the right-handed twist of β-sheets, 389
Ion-pairs in protein, 867

Jakubowski, H. (see also Koontz, S. W.), 747
James, M. N. G. (see also McPhalen, C. A.), 445
Johansson, J. (see also Flinta, C.), 193
Jonassen, I. (see also McPhalen, C. A.), 445

Kalk, K. H. (see also Dijkstra, B. W.), 163
Kantrowitz, E. R. (see also Silver, R. S.), 729
Kaplan, J. B. & Nichols, B. P., Nucleotide sequence of *Escherichia coli pabA* and its evolutionary relationship to *trp(G)D*, 451
Kim, J. (see also Anderson, W. F.), 903
King, T. C. (see also Klein, B. K.), 809
Klein, B. K., King, T. C. & Schlessinger, D., Structure of partially denatured *Escherichia coli* 23 S ribosomal RNA determined by electron microscopy, 809
Klysik, J., Stirdivant, S. M., Singleton, C. K., Zacharias, W. & Wells, R. D., Effects of 5 cytosine methylation on the *B–Z* transition in DNA restriction fragments and recombinant plasmids, 51
Koontz, S. W., Jakubowski, H. & Goldman, E., Control of RNA and protein synthesis by the concentration of Trp-RNA^{Trp} in *Escherichia coli* infected with bacteriophage MS2, 747
Krovatin, W. (see also Sauer, R. T.), 699

La Mar, G. N., Davis, N. L., Parish, D. W. & Smith, K. M., Heme orientational disorder in reconstituted and native sperm whale myoglobin. Proton nuclear magnetic resonance characterizations by heme methyl deuterium labeling in the Met-cyano protein, 887
λ N specificity is exhibited by *Escherichia coli nusB* mutations that suppress *nusA1*, 73
Left-handed helices in methylated DNA, 51
Lenches, E. M. (see also Arias, C.), 87
Levitt, M., Molecular dynamics of native protein. I. Computer simulation of trajectories, 595
— — — — — —. II. Analysis and nature of motion, 621
& Meirovitch, H., Integrating the equations of motion (*Appendix* to Levitt, M., 595), 617
Lewis, M. (see also Rees, D. C.), 367
Lipscomb, W. N. (see also Rees, D. C.), 367
Livingston, D. M. (see also Tenen, D. G.), 791
Losick, R. (see also Banner, C. D. B.), 351
Louie, A. H. & Somorjai, R. L., Differential geometry of proteins. Helical approximations, 143
Lowey, S. (see also Woodhead, J. L.), 831
Lupinus luteus mitochondrial tRNA genes are transcribed in *Xenopus laevis* oocyte nuclei, 439

lysA gene activator encoded by *lysR* gene, 307
lysA gene nucleotide sequence, 321
Lysozyme, correlation of hydrogen exchange behaviour and thermal stability, 687
lysR gene identified as encoding an activator of the *lysA* gene, 307
— — nucleotide sequence, 333

McPhalen, C. A., Evans, C., Hayakawa, K., Jonassen, I., Svendsen, I. & James, M. N. G., Preliminary crystallographic data for the serine protease inhibitor C1-2 from barley seeds, 445
Mahendrasingam, A., Pigram, W. J., Fuller, W., Brahms, J. & Vergne, J., Conformational transitions in the synthetic polynucleotide poly[d(G-C)] · poly[d(G-C)] double-helix, 897
Makino, K. (see also Shinagawa, H.), 477
Mapping, molecular, of genetic and chromomeric units in *Drosophila melanogaster*, 35
Martin, R. G. (see also Tenen, D. G.), 791
Matthews, B. W. (see also Anderson, W. F.), 903
May, F. E. B., Westley, B. R., Wyler, T. & Weber, R., Structure and evolution of the *Xenopus laevis* albumin genes, 229
Meirovitch, H. (see also Levitt, M.), 617
Mellado, R. P. & Murray, K., Synthesis of yeast histone 3 in an *Escherichia coli* cell-free system, 489
Metal ions, divalent, induce self-association of a high molecular weight subfragment-2 of myosin, 207
Met-cyano form of sperm whale myoglobin, heme orientational disorder, 887
Met-hemoglobin of *Dicrocoelium dendriticum*, spectral properties and reactivity towards azide, 181
Methylation, 5 cytosine, effects on the *B Z* transition in DNA restriction fragments and recombinant plasmids, 51
Meyerowitz, E. M. (see also Garfinkel, M. D.), 765
Microtubular organization is controlled by two cell division cycle genes *NDA2* and *NDA3* of the fission yeast *Schizosaccharomyces pombe*, 271
Mitochondrial transfer RNA genes from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*) are transcribed in *Xenopus laevis* oocyte nuclei, 439
— ubiquinol: cytochrome *c* reductase in detergent solutions, low-resolution structural studies by neutron scattering, 847
Modular protein evolution in the *Drosophila* 68C glue gene cluster, 765
Moran, C. P. Jr (see also Banner, C. D. B.), 351
M-protein and creatine kinase of skeletal muscle, *in vitro* interactions with myosin and its subfragments, 831
MS2 (see also Bacteriophage), 747
Murine monoclonal IgG2b immunoglobulin, preliminary crystallographic study of the Fc fragment, 907
Murray, K. (see also Mellado, R. P.), 489
Murthy, M. R. N., Comparison of the nucleotide sequences of cucumber mosaic virus and brome mosaic virus, 469
Muscle M-protein and creatine kinase, *in vitro* interactions with myosin and its subfragments, 831
—, skeletal, rabbit, quantitative determination of myosin and actin, 123
Mutants, cold-sensitive nuclear division arrest, of the fission yeast *Schizosaccharomyces pombe*, 251
— of *Escherichia coli* aspartate transcarbamylase with single amino acid substitutions, 729
of Sindbis virus defective in the intracellular transport of their glycoproteins, sequence analysis, 87
Mutation, *pfkB1*, causing a high level of *Escherichia coli* phosphofructokinase-2, 285
Myoglobin of sperm whale, heme orientational disorder; proton n.m.r. characterizations, 887
Myosin and actin, quantitative determination in rabbit skeletal muscle, 123
, self-association of a high molecular weight subfragment-2 induced by divalent metal ions, 207
— and its subfragments, *in vitro* interactions with skeletal muscle M-protein and creatine kinase, 831

N specificity of *nusB* mutations, 73
Nakata, A. (see also Shinagawa, H.), 477
NDA2 and *NDA3* genes of the fission yeast *Schizosaccharomyces pombe* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
Némethy, G. (see also Chou, K.-C.), 389
Neutron scattering low-resolution structural studies of mitochondrial ubiquinol: cytochrome *c* reductase in detergent solutions, 847
Nichols, B. P. (see also Kaplan, J. B.), 451
Nikonov, S. N. (see also Chirgadze, Y. N.), 449
Nuclear division arrest mutants, cold-sensitive, of the fission yeast *Schizosaccharomyces pombe*, 251

Nucleotide sequence of cucumber mosaic virus, comparison with brome mosaic virus, 469
— — — *Escherichia coli pabA* and its evolutionary relationship to *trp(G)D*, 451
— — — the *lysA* gene and its regulatory region, 321
— — and regulation of the *lysR* gene, 333
nusB mutations, *Escherichia coli*, that suppress *nusA1* exhibit λ N specificity, 73

Ohlendorf, D. H. (see also Anderson, W. F.), 903
Ohshima, Y. (see also Tani, T.), 579
Okada, N. (see also Tani, T.), 579
Oligo-adenylate-terminated transposable sequences, family, in *Drosophila melanogaster*, 715
Orientational disorder, heme, in reconstituted and native sperm whale myoglobin. Proton n.m.r. characterizations by heme methyl deuterium labeling in the Met-cyano protein, 887
Ou, J.-H., Strauss, E. G. & Strauss, J. H., The 5′-terminal sequences of the genomic RNAs of several alphaviruses, 1
Oxidation of cytochrome *c*, converting structural changes to electrostatic reorganization energy, 693
Oxygen equilibrium studies on hemoglobin from the bluefin tuna (*Thunnus thynnus*), 673

P22 (see also Bacteriophage), 699
pabA, *Escherichia coli*, nucleotide sequence, and its evolutionary relationship to *trp(G)D*, 451
Panulirus interruptus haemocyanin, crystals containing a single subunit type, 197
Parish, D. W. (see also La Mar, G. N.), 887
Patte, J.-C. (see also Stragier, P.), 307, 321, 333
Perkins, S. J. & Weiss, H., Low-resolution structural studies of mitochondrial ubiquinol : cytochrome *c* reductase in detergent solutions by neutron scattering, 847
pfkB1 mutation causing a high level of *Escherichia coli* phosphofructokinase-2, 285
Phillips, M. L. (see also Poon, P. H.), 563
pho regulon regulation in *Escherichia coli* K-12. Genetic and physiological regulation of the positive regulatory gene *phoB*, 477
Phosphofructokinase-2 of *Escherichia coli*, molecular cloning of the gene, and the nature of a mutation, *pfkB1*, causing a high level of the enzyme, 285
Phospholipase A_2, porcine, structure at 2·6 Å resolution, and comparison with bovine phospholipase A_2, 163
Pigram, W. J. (see also Mahendrasingam, A.), 897
Polar residue distribution in trans-membrane helices, and helical sidedness, 193
Poly[d(G-C)] · poly[d(G-C)] double-helix, conformational transitions, 897
Poon, P. H., Schumaker, V. N., Phillips, M. L. & Strang, C. J., Conformation and restricted segmental flexibility of C1, the first component of human complement, 653
Porcine pancreatic phospholipase A_2, structure at 2·6 Å resolution, and comparison with bovine phospholipase A_2, 163
Poulsen, F. M. (see also Delepierre, M.), 687
Promoter for a developmentally regulated gene from *Bacillus subtilis*, deletion analysis, 351
Protease inhibitor homologues from black mamba venom; evolutionary conservation and variation of protein folding pathways, 409
Protein differential geometry; helical approximation, 143
  evolution in the *Drosophila* 68C glue gene cluster, 765
  folding pathways, evolutionary conservation and variation; two protease inhibitor homologues from black mamba venom, 409
  ion-pairs, 867
  molecular dynamics, analysis and nature of motion, 621
    –, computer simulation of trajectories, 595
  synthesis control by the concentration of Trp-tRNA^{Trp} in *Escherichia coli* infected with bacteriophage MS2, 747
Pruitt, R. E. (see also Garfinkel, M. D.), 765

Rabbit skeletal muscle, quantitative determination of myosin and actin, 123
Rat U2 small nuclear RNA gene, molecular cloning and characterization, 579
Rees, D. C., Lewis, M. & Lipscomb, W. N., Refined crystal structure of carboxypeptidase A at 1·54 Å resolution, 367
Regulation of diaminopimelate decarboxylase synthesis in *Escherichia coli*. Identification of a *lysR* gene encoding an activator of the *lysA* gene, 307
— — —. Nucleotide sequence of the *lysA* gene and its regulatory region, 321

Regulation of diaminopimelate decarboxylase synthesis in *Escherichia coli*. Nucleotide sequence and regulation of the *lysR* gene, 333
— — the F conjugation genes studied by hybridization and *tra-lacZ* fusion, 103
— — — *pho* regulon in *Escherichia coli* K-12. Genetic and physiological regulation of the positive regulatory gene *phoB*, 477
Renetseder, R. (see also Dijkstra, B. W.), 163
Repetitive autonomously replicating sequences in *Saccharomyces cerevisiae* that have very similar genomic environments, 505
Replication origins, viral, and the binding of SV40 large T antigen, 791
Reshetnikova, L. S. (see also Chirgadze, Y. N.), 499
RNA and protein synthesis control by the concentration of Trp-tRNA^{Trp} in *Escherichia coli* infected with bacteriophage MS2, 747
—, ribosomal, from a hybrid 5 S ribosomal RNA gene in a plasmid; initiation, processing and termination, 525
—, U2, rat, molecular cloning and characterization of gene, 579
RNAs, genomic, of several alphaviruses, the 5′-terminal sequences, 1
Ribosomal RNA from a hybrid 5 S ribosomal RNA gene in a plasmid; initiation, processing and termination, 525
— 23 S RNA, *Escherichia coli*, partially denatured, structure determined by electron microscopy, 809
Richaud, F. (see also Stragier, P.), 307
Rodgers, M. E. (see also Ueno, H.), 207
rosy locus in *Drosophila melanogaster*, chromosomal walking and jumping to isolate DNA, 17
rrnA promoters, *Escherichia coli*, fusion to a transcription termination signal from the end of *rrnD*, 557

Saccharomyces cerevisiae repetitive autonomously replicating sequences that have very similar genomic environments, 505
Sauer, R. T., Krovatin, W., Deanda, J., Youderian, P. & Susskind, M. M., Primary structures of the *imm*I immunity region of bacteriophage P22, 699
Scheraga, H. A. (see also Chou, K.-C.), 389
Schizosaccharomyces pombe, cold-sensitive nuclear division arrest mutants, 251
— —, two cell division cycle genes *NDA2* and *NDA3* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
Schlessinger, D. (see also Klein, B. K.), 809
Schumaker, V. N. (see also Poon, P. H.), 563
Self-association of a high molecular weight subfragment-2 of myosin induced by divalent metal ions, 207
Selvarajah, D. (see also Delepierre, M.), 687
Sequence analysis of two mutants of Sindbis virus defective in the intracellular transport of their glycoproteins, 87
—, nucleotide, of cucumber mosaic virus, comparison with brome mosaic virus, 469
—, —, — *Escherichia coli pabA*, and its evolutionary relationship to *trp(G)D*, 451
—, —, — the *lysA* gene and its regulatory region, 321
—, nucleotide, and regulation of the *lysR* gene, 333
Sequences of DNA, gene regulation and modular protein evolution in the *Drosophila* 68C glue gene cluster, 765
—, family, oligo-adenylate-terminated, transposable, in *Drosophila melanogaster*, 715
—, 5′-terminal, of the genomic RNAs of several alphaviruses, 1
—, repetitive autonomously replicating, in *Saccharomyces cerevisiae*, that have very similar genomic environments, 505
Serine protease inhibitor CI-2 from barley seeds, preliminary crystallographic data, 445
Shinagawa, H., Makino, K. & Nakata, A., Regulation of the *pho* regulon in *Escherichia coli* K-12. Genetic and physiological regulation of the positive regulatory gene *phoB*, 477
Sickle cell hemoglobin, dielectric properties in solution and gel, 659
Silver, R. S., Daigneault, J. P., Teague, P. D. & Kantrowitz, E. R., Analysis of two purified mutants of *Escherichia coli* aspartate transcarbamylase with single amino acid substitutions, 729
Simian virus 40 (see also Virus), 791
Sindbis virus (see also Virus), 87
Singleton, C. K. (see also Klysik, J.), 51
68C glue gene cluster of *Drosophila*; DNA sequences, gene regulation and modular protein evolution, 765
Skurray, R. (see also Gaffney, D.), 103
Smit, J. D. G. (see also Ascenzi, P.), 181

Smith, K. M. (see also La Mar, G. N.), 887
Somorjai, R. L. (see also Louie, A. H.), 143
Spectral properties and reactivity towards azide of *Dicrocoelium dendriticum* met-hemoglobin, 181
Sperm whale myoglobin, heme orientational disorder; proton n.m.r. characterizations, 887
Spierer, A. (see also Spierer, P.), 35
Spierer, P., Spierer, A., Bender, W. & Hogness, D. S., Molecular mapping of genetic and chromomeric units in *Drosophila melanogaster*, 35
— (see also Bender, W.), 17
Stirdivant, S. M. (see also Klysik, J.), 51
Stragier, P. & Patte, J.-C., Regulation of diaminopimelate decarboxylase synthesis in *Escherichia coli*. III. Nucleotide sequence and regulation of the *lysR* gene, 333
—, Danos, O. & Patte, J.-C., Regulation of diaminopimelate decarboxylase synthesis in *Escherichia coli*. II. Nucleotide sequence of the *lysA* gene and its regulatory region, 321
—, Richaud, F., Borne, F. & Patte, J.-C., Regulation of diaminopimelate decarboxylase synthesis in *Escherichia coli*. I. Identification of a *lysR* gene encoding an activator of the *lysA* gene, 307
Strang, C. J. (see also Poon, P. H.), 563
Strauss, E. G. (see also Arias, C.), 87
— (see also Ou, J.-H.), 1
Strauss, J. H. (see also Arias, C.), 87
— (see also Ou, J.-H.), 1
Structural changes upon oxidation of cytochrome *c*, converting to electrostatic reorganization energy, 693
studies, low-resolution, of mitochondrial ubiquinol : cytochrome *c* reductase in detergent solutions by neutron scattering, 847
Structure and evolution of the *Xenopus laevis* albumin genes, 229
— of partially denatured *Escherichia coli* 23 S ribosomal RNA determined by electron microscopy, 809
— — porcine pancreatic phospholipase A_2 at 2·6 Å resolution and comparison with bovine phospholipase A_2, 163
—, primary, of the *imm*I immunity region of bacteriophage P22, 699
—, refined, of carboxypeptidase A at 1·54 Å resolution, 367
Subfragment-2, high molecular weight, of myosin, self-association induced by divalent metal ions, 207
Susskind, M. M. (see also Sauer, R. T.), 699
Svendsen, I. (see also McPhalen, C. A.), 445
Synthesis of yeast histone 3 in an *Escherichia coli* cell-free system, 489
Szeberényi, J. & Apirion, D., Initiation, processing and termination of ribosomal RNA from a hybrid 5 S ribosomal RNA gene in a plasmid, 525

T antigen, SV40, from virus-infected monkey cells, binding to wild-type and mutant viral replication origins, 791
Takashima, S. (see also Delalic, Z.), 659
Takeda, Y. (see also Anderson, W. F.), 903
Tani, T., Watanabe-Nagusa, N., Okada, N. & Ohshima, Y., Molecular cloning and characterization of a gene for rat U2 small nuclear RNA, 579
Taylor, T. S. (see also Tenen, D. G.), 791
Teague, P. D. (see also Silver, R. S.), 729
Tenen, D. G., Taylor, T. S., Haines, L. L., Bradley, M. K., Martin, R. G. & Livingston, D. M., Binding of simian virus 40 large T antigen from virus-infected monkey cells to wild-type and mutant viral replication origins, 791
Thermal stability of lysozyme, correlation with hydrogen exchange behaviour, 687
Thermus thermophilus HB8, crystallographic study of elongation factor G, 449
Thornton, J. M. (see also Barlow, D. J.), 867
Thunnus thynnus, oxygen equilibrium studies on hemoglobin, 673
Toda, T., Umesono, K., Hirata, A. & Yanagida, M., Cold-sensitive nuclear division arrest mutants of the fission yeast *Schizosuccharomyces pombe*, 251
Toda, T. (see also Umesono, K.), 271
Tougard, P (see also Comarmond, M.-B.), 907
Trajectories in molecular dynamics of native protein, computer simulation, 595
tra-lacZ fusion used in study of the F conjugation genes, 103
Transcription in *Xenopus laevis* oocyte nuclei of mitochondrial tRNA genes from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*), 439
Transfer RNA genes, mitochondrial, from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*) are transcribed in *Xenopus laevis* oocyte nuclei, 439

Trans-membrane helices, helical sidedness and the distribution of polar residues, 193
Transport, intracellular, of Sindbis virus glycoproteins; sequence analysis of two mutants, 87
trp(G)D, evolutionary relationship to nucleotide sequence of *Escherichia coli pabA*, 451
Trp-tRNA^{Trp} concentration in *Escherichia coli* infected with bacteriophage MS2 controls RNA and protein synthesis, 747
Tye, B.-K. (see also Chan, C. S. M.), 505

U2 small nuclear RNA gene, rat, molecular cloning and characterization, 579
Ubiquinol : cytochrome *c* reductase, mitochondrial, in detergent solutions, low-resolution structural studies by neutron scattering, 847
Ueno, H., Rodgers, M. E. & Harrington, W. F., Self-association of a high molecular weight subfragment-2 of myosin induced by divalent metal ions, 207
Umesono, K., Toda, T., Hayashi, S. & Yanagida, M., Two cell division cycle genes *NDA2* and *NDA3* of the fission yeast *Schizosaccharomyces pombe* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
Umesono, K. (see also Toda, T.), 251

Vandonselaar, M. (see also Anderson, W. F.), 903
Vereyken, J. M. (see also Gaykema, W. P. J.), 197
Vergne, J. (see also Mahendrasingam, A.), 897
Virus, cucumber mosaic, and brome mosaic, comparison of their nucleotide sequences, 469
—, Sindbis, sequence analysis of two mutants defective in the intracellular transport of their glycoproteins, 87
—, SV40, binding of large T antigen from virus-infected monkey cells to wild-type and mutant viral replication origins, 791
Von Heijne, G. (see also Flinta, C.), 193

Walking and jumping, chromosomal, to isolate DNA from the *Ace* and *rosy* loci and the bithorax complex in *Drosophila melanogaster*, 17
Ward, D. F., Delong, A. & Gottesman, M. E., *Escherichia coli nusB* mutations that suppress *nusA1* exhibit λ N specificity, 73
Warshel, A. & Churg, A. K., Converting structural changes upon oxidation of cytochrome *c* to electrostatic reorganization energy, 693
Watanabe-Nagusa, N. (see also Tani, T.), 579
Weber, R. (see also May, F. E. B.), 229
Wedin, R. E. (see also Delepierre, M.), 687
Weiss, H. (see also Perkins, S. J.), 847
Wells, R. D. (see also Klysik, J.), 51
Westley, B. R. (see also May, F. E. B.), 229
Willetts, N. (see also Gaffney, D.), 103
Winterhalter, K. H. (see also Ascenzi, P.), 181
Woodhead, J. L. & Lowey, S., An *in vitro* study of the interactions of skeletal muscle M-protein and creatine kinase with myosin and its subfragments, 831
Wyler, T. (see also May, F. E. B.), 229

Xenopus laevis albumin genes, structure and evolution, 229
— — oocyte nuclei used for transcription of mitrochondrial tRNA genes from fungi (*Aspergillus nidulans*) and plants (*Lupinus luteus*), 439

Yanagida, M. (see also Toda, T.), 251
Yanagida, M. (see also Umesono, K.), 271
Yates, L. D. & Greaser, M. L., Quantitative determination of myosin and actin in rabbit skeletal muscle, 123
Yeast histone 3 synthesis in an *Escherichia coli* cell-free system, 489
— *Schizosaccharomyces pombe*, cold-sensitive nuclear division arrest mutants, 251
— — —, two cell division cycle genes *NDA2* and *NDA3* control microtubular organization and sensitivity to anti-mitotic benzimidazole compounds, 271
Yonetani, T. (see also Ikeda-Saito, M.), 673
Youderian, P. (see also Sauer, R. T.), 699

Zacharias, W. (see also Klysik, J.), 51